

DuPont CEO Ellen Kullman is 2014 Commencement speaker

Reif: DuPont, MIT ‘kindred spirit[s]’ in collaboration

By Leon Lin
ASSOCIATE NEWS EDITOR

Ellen Kullman, the CEO and chairwoman of DuPont, will deliver the keynote Commencement speech in June 2014, MIT is expected to announce today. She will be the fourth speaker in five years at the helm of a science or technology company.

“At DuPont, we have used the power of science and our knowledge of the markets to transform industries for over two centuries,” Kullman told MIT’s news office. “I am honored to welcome the graduating class of MIT to join the global community of solvers, inventors, and leaders as we all work together to solve the world’s toughest challenges.”

In 1988, Kullman joined the company that brought the world neoprene, nylon, and Kevlar, and she became the chemical giant’s first female CEO in 2009. Since then, *Forbes* and *Fortune* have listed Kullman among the world’s most powerful women.

As CEO, Kullman has expressed her intentions to make DuPont more than a chemical company. In 2011 DuPont acquired Danisco, which produced food ingredients and

other bioproducts, and last month DuPont spun off a major chemicals division that produced Teflon, the non-stick coating, and titanium dioxide, the pigment that makes paper white.

“The first 100 years we made explosives, the next 100 was modern chemistry and about 20 years ago we started in biotechnology. The next 100 years is going to be about integrating the sciences,” she told *Forbes* magazine.

DuPont has sponsored more than \$50 million in research at dozens of MIT labs since 2000, records show. MIT President L. Rafael Reif said that a “sense of kindred spirit” of improving the world through science has informed this collaboration.

The final selection of the speaker is the president’s decision, according to Chancellor Eric Grimson PhD ’80, who chairs the Commencement committee. A subcommittee that includes faculty members as well as undergraduate and graduate student leaders is responsible for supplying a list of around 10 suggested names.

The shortlist was drawn up after Class of 2014 President Anika Gupta ’14 solicited names from students. Gupta said that the most popu-

lar choices were President Barack Obama and actor Robert Downey Jr., who portrays Marvel’s Iron Man. But Gupta said that she was happy to see the president choose speakers “clearly tailored to MIT graduates” in the past few years. “I think it makes sense for them to bring in and have us listen to some of the most inspiring engineering leaders of today,” she said.

Undergraduate Association President Sidhanth P. Rao ’14, who declined to say whether Kullman was in the shortlist or among the students’ suggestions, said that he saw parallels between MIT’s latest initiatives and its Commencement speaker choices. Salman A. Khan ’98, founder of Khan Academy, spoke to graduates in 2012 soon after the announcement of edX, the online education initiative founded by Harvard and MIT. The selection of Kullman comes on the heels of the formation of Reif’s new Innovation Initiative, which seeks to boost innovation in the manufacturing sector.

Unlike other colleges, MIT does not pay Commencement speakers or award them honorary degrees. “We want speakers who are motivat-



COURTESY OF DUPONT

Ellen Kullman, CEO of DuPont, will be the Commencement speaker for the 2014 Commencement in June.

Kullman, Page 8

OBITUARY

Crandall passes at 92

Emeritus MechE professor remembered

**By Alissa Mallinson,
William B.C. Crandall,
and Jane Kontrimas**

Stephen H. Crandall, the Ford Professor of Engineering Emeritus at MIT, a pioneer in random vibrations and rotordynamics, and a leader in transforming mechanics into an engineering science, passed away Oct. 29, in Needham, Mass. He was 92 years old.

Crandall was born in the Philippine Islands in 1920. Graduating with a degree in mechanical engineering from Stevens Institute of Technology in the early days of World War II, he joined MIT as a staff member in the Radiation Laboratory in 1942.

After earning his PhD in mathematics from MIT in 1946, he transferred to the Department of Mechanical Engineering. There, he was appointed to assistant professor of mechanical engineering in 1947, associate professor in 1951, then to professor in 1958. He was named Ford Professor of Engineering in 1975, and an emeritus professor in 1991.

Across MIT, Crandall is remembered as an outstanding teacher and scholar, noted for the clarity of his lectures: He spoke slowly, but managed to cover plenty of material. While at MIT, he led the transformation of mechanics into an engineering science, acting as editor of three groundbreaking texts: “Random Vibrations” (1958), “An

Introduction to the Mechanics of Solids” (1959), and “Dynamics of Mechanical and Electromechanical Systems” (1968). Crandall was a pioneer of random vibrations research, offering the first academic course on the subject in 1958, and subsequently directing MIT’s Acoustics and Vibration Laboratory for 33 years. He published a total of eight books and 160 technical papers.

Crandall was professionally active as an engineering consultant and a member of many technical societies. He served as chairman of the Executive Committee of the Applied Mechanics Division and as vice president of Basic Engineering for the American Society of Mechanical Engineers (ASME); he also served as president of the American Academy of Mechanics. He served as chairman of the U.S. National Committee for Theoretical and Applied Mechanics and of the Solid Mechanics Panel of the International Union of Theoretical and Applied Mechanics. He was also a member of the Board of the International Commission for Acoustics.

Throughout the years, a steady stream of students enjoyed the hospitality of Crandall and his gracious wife, Pat: They generously opened their house in Lincoln, Mass., to a variety of student groups. Their interest in teaching and supporting foreign students was initiated by their first sabbatical

Crandall, Page 9

Lobby 10 to be renamed ‘Memorial Lobby’

On Nov. 18, Lobby 10 will be officially renamed “Memorial Lobby.”

The lobby currently bears on its walls the names of MIT alumni who lost their lives in World War I, World War II, the Korean War, and the Vietnam War. These engravings were restored last year to be made easier to read.

According to the *MIT News Office*, students, faculty, and organizations around campus have urged for the name change for at least two years. Efforts were led by the ROTC Oversight Committee and the MIT Military Alumni Association.

Last spring, Eric Victor, a graduate student in chemistry, wrote to *The Tech*, in support of renaming Lobby 10. He argued that MIT should follow in the footsteps of peer institutions like Harvard, Yale, and Princeton, which have memorials dedicated to their respective military alumni named “Memorial Hall” or “Memorial

Rotunda.”

After former dean of undergraduate education Daniel E. Hastings PhD ’80 approved the ROTC Oversight Committee’s proposal, final approval came from MIT president L. Rafael Reif and the Executive Committee of the MIT Corporation. “I think the renaming honors the sacrifices that our MIT graduates have made to the country, and MIT can be proud of all that they and MIT have done to serve the country,” Hastings said to the *MIT News Office*.

Lobby 10, located underneath the Great Dome and on the Infinite Corridor, often serves a place for clubs to advertise their upcoming events. According to Campus Activities Complex & Student Activities Office, nothing may be hung from the ceiling or placed on the walls to respect its role as a war memorial.

—Anthony Yu

IN SHORT

There will be a naming ceremony for the Memorial Lobby on Monday, Nov. 18 in Lobby 10 at 5 p.m. All are welcome to attend. There will be speakers followed by a reception.

Drop Date is next Wednesday, Nov. 20. This is the last day to drop classes, change classes from credit to Listener, or register a credit UROP. Be sure to get all of your forms signed and turned in by 5 p.m. on that day!

The Senior Gift Kickoff for the Class of 2014 is Tuesday at 7:30 p.m. in the Bush Room (10-105). Seniors, come be the first to donate

to the gift fund!

Need advice on getting a UROP? The UAAP is having a “How to Find a UROP” workshop today at 3:30 p.m. in 1-190. Come get tips on how to break into research at the Institute.

The MIT Symphony Orchestra concert is this Friday at 8 p.m. in Kresge Auditorium. Tickets are free in advance on <http://mitmta.eventbrite.com/> or \$5 at the door..

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THE EVIL OVERLORD’S JOURNAL

The simulation of World Domination often lies. **FUN, p. 6**

INNOVATION NATION

On the day-long Cyberposium conference. **CAMPUS LIFE, p. 11**



IN NATURE: LITTLE BROWN BIRDS

Recognizing thrushes, faces, and friends. **CAMPUS LIFE, p. 1**

BLACKHEART BURLESQUE TOUR

The Tech interviews the tour’s organizer, Missy Suicide (Selena Mooney). **ARTS, p. 7**

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Supreme Court takes up challenges to union practices

By **Steven Greenhouse**
THE NEW YORK TIMES

Labor leaders and businesses are closely watching a Supreme Court case to be argued Wednesday that involves a popular strategy used by unions to successfully organize hundreds of thousands of workers. That strategy — widely deployed by the Service Employees International Union and the Unite Here hotel workers union — involves pressuring an employer into signing a so-called neutrality agreement in which the employer promises not to oppose a unionization drive. By some estimates, more than half of the recent successful unionization campaigns

involve such agreements, which sometimes allow union organizers onto company property to talk with workers. Benjamin Sachs, a professor of labor law at Harvard Law School, said the case before the Supreme Court was potentially “the most significant labor case in a generation.” Sachs said that if the court ruled against labor, it could significantly hobble efforts by private sector unions to organize workers. He added that the other big labor case the Supreme Court has agreed to hear this session could have a significant effect on public sector unions. In that case, a home-care worker has asked the court to rule that the state of Illinois violated her First Amendment

rights by requiring her to pay “fair share” fees, much like dues, to a union she did not support. In the case being argued on Wednesday, an employee of Mardi Gras Gaming in Florida sued Unite Here, asserting that its neutrality agreement with the company was illegal. The 11th U.S. Circuit Court of Appeals ruled in his favor, finding that the agreement was a “thing of value” that federal labor law bars employers from giving to any union or union official. Unite Here appealed, urging the Supreme Court to overturn the 11th Circuit and instead embrace rulings of the 3rd and 4th Circuits, which have held that such agreements were not illegal things of value.

Shopping spree in China sets record in online sales

By **Shanshan Wang and Eric Pfanner**
THE NEW YORK TIMES

HANGZHOU, China — Unmarried men across China used to spend Nov. 11 lamenting their single status with a drink. Now that unofficial holiday has become the world’s largest online shopping event. On Monday, China’s biggest online shopping company processed more than \$5.75 billion in its online payments system — a record for a single day anywhere in the world, surpassing by 2 1/2 times the total

for American retailers last year on so-called Cyber Monday. The company, Alibaba, which owns Tmall and other e-commerce sites, first latched onto so-called Singles’ Day, symbolized by the four lonely 1s of 11/11, five years ago. The company realized men could just as easily seek solace by buying electronic devices and other gear on its sites. Soon enough, just about everyone else did, too. Alibaba reported Monday that it had 402 million unique visitors to its sites — more than a third of the adult population in China — and

prepared 152 million parcels for shipping. *Tmall.com*, one of Alibaba’s shopping sites, said Chinese bought 1.6 million bras, which it helpfully noted would reach three times the height of Mount Everest if folded and stacked, and 2 million pairs of underpants, which if linked together would stretch 1,800 miles, all before the lunch hour. At *55tuan.com*, a Groupon-style site, men were offered a bride-hunting trip to Vietnam: “Singles, don’t shed tears!” it said. “*55tuan.com* will send you to Vietnam to find true love!”

Michelle Obama edges into a policy role on higher education

WASHINGTON — Michelle Obama, after nearly five years of evangelizing exercise and good eating habits, will begin a new initiative on Tuesday that seeks to increase the number of low-income students who pursue a college degree. The goals of the program reflect the first lady’s own life and will immerse her more directly in her husband’s policies. “I’m here today because I want you to know that my story can be your story,” Obama is to tell students at Bell Multicultural High School in Washington on Tuesday, according to an advance text of her remarks. “The details might be a little different, but so many of the challenges and triumphs will be just the same.” The first lady will add that whether students want to be doctors, teachers, mechanics or software designers, “you have got to do whatever it takes to continue your education after high school — whether that’s going to a community college, or getting a technical certificate, or completing a training opportunity, or heading off to a four-year college.” —*Jennifer Steinhauer, The New York Times*

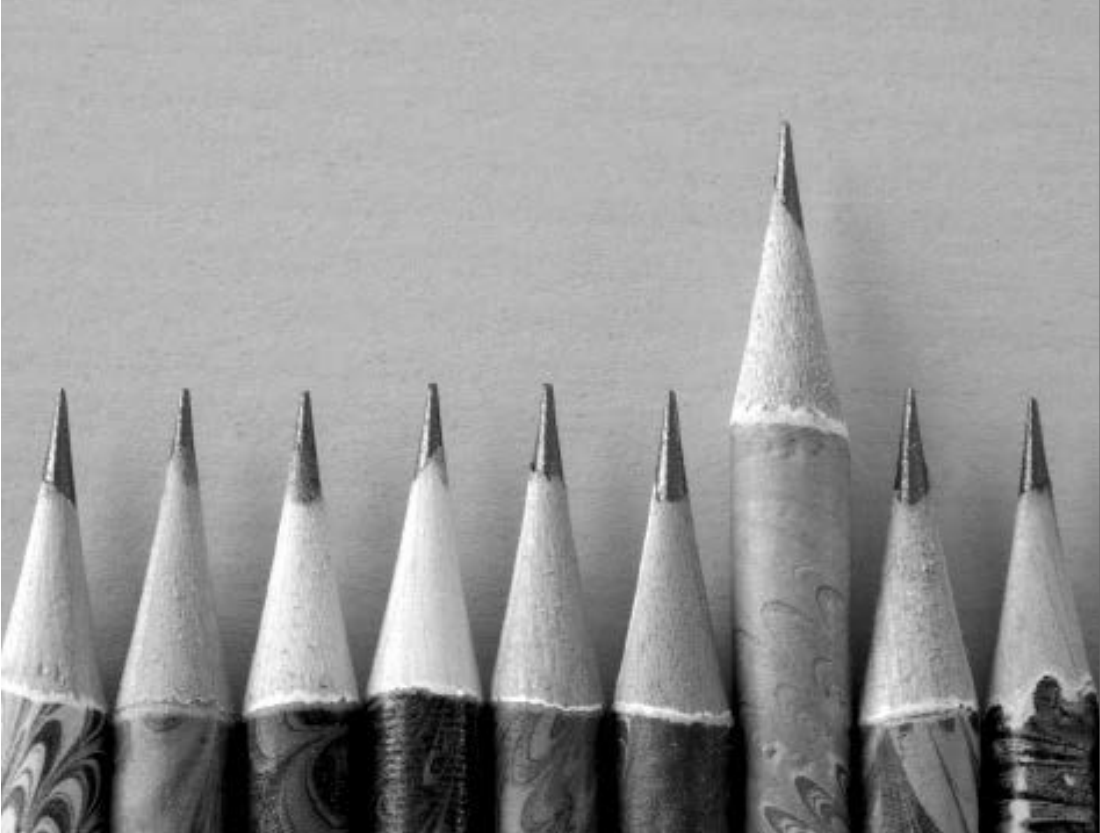
UN court rules for Cambodia in temple dispute with Thailand

BANGKOK — The International Court of Justice on Monday handed Cambodia a partial victory in its territorial dispute with Thailand over the land surrounding an ancient temple along the country’s border. The court, the top judicial body of the United Nations, said in its judgment that Cambodia had sovereignty over the immediate area around Preah Vihear Temple — the promontory on which it sits. But the court left unresolved who controls a larger disputed area, where Cambodian and Thai troops have clashed in recent years. Thailand, the court said, is “under an obligation to withdraw from that territory the Thai military or police forces, or other guards or keepers, that were stationed there.” Nationalist groups have urged the Thai government not to respect the verdict. In a nationally televised speech after news of the decision, Prime Minister Yingluck Shinawatra said the government would negotiate further on the issue with Cambodia. Ownership of the temple and its surrounding areas, a dispute that dates back decades, is an emotional one and has been used by politicians on both sides of the border to stoke nationalist feelings. Cambodia was awarded sovereignty over the temple in a 1962 decision by the same court, based in The Hague, Netherlands, and Monday’s judgment clarified that decision. —*Thomas Fuller, The New York Times*

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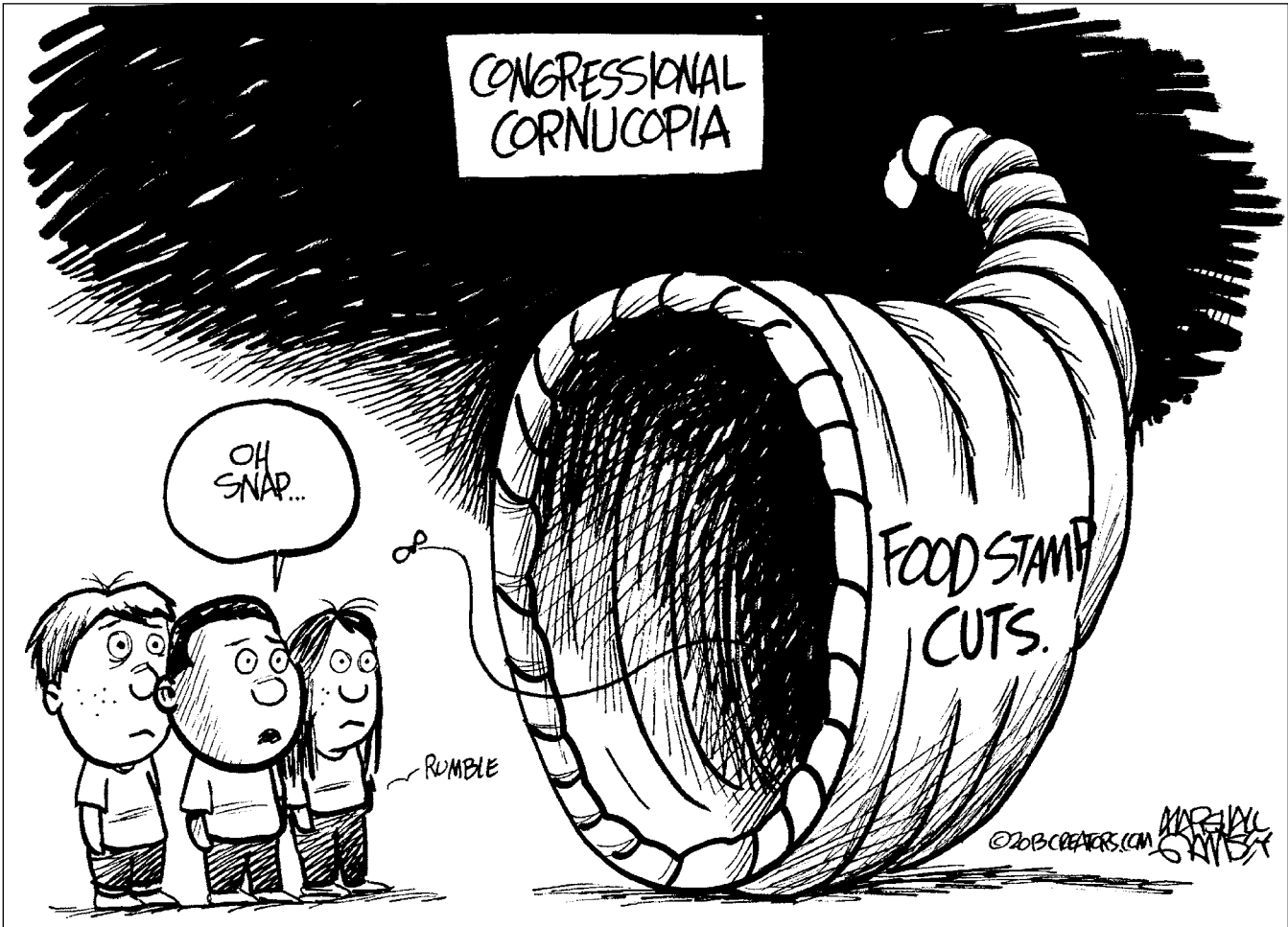
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An article in Friday's issue on the Chancellor search mistakenly referred to President L. Rafael Reif as Rafael L. Reif. The same article also quoted Reif saying "he has to be a good educator" of a new Chancellor — the intent was rather "he or she."

Princeton.

In last Tuesday's News Briefs, the section regarding city council mistakenly attributed a proposed response to Assistant Attorney General Amy Nable. The response to the complaint from Charles Teague was actually signed by the city clerk, Donna P. Lopez, and addressed to Nable. A modified version of that response to Teague's complaint was approved by the city council at their Nov. 4 meeting.

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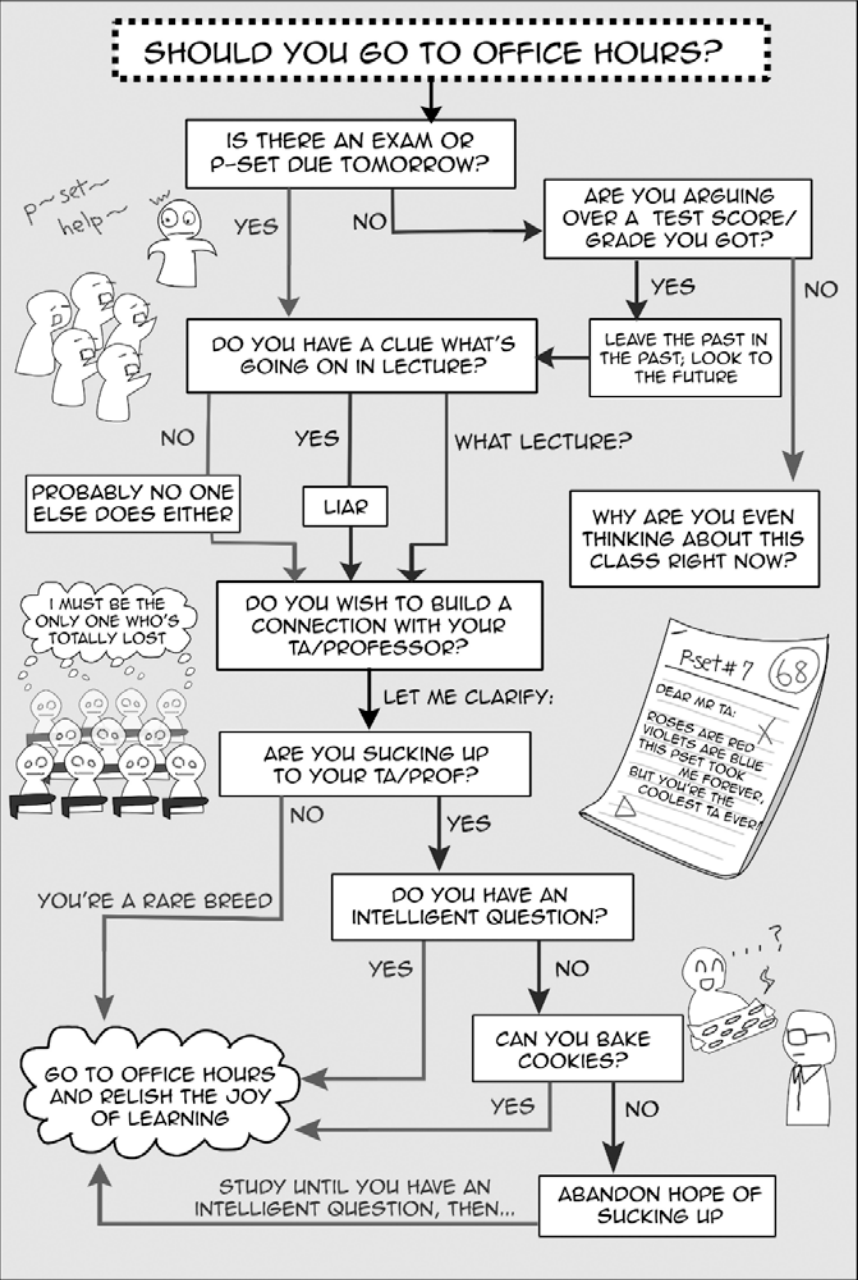
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Q.E.D. (QUITE EASILY DONE) BY ERIKA TRENT



S M B C SATURDAY MORNING BREAKFAST CEREAL BY ZACH WEINER [3170]



Nobody dislikes currency inflation more than strippers.

Sudoku

Solution, page 8

2						4	5	9
				7			3	
6		5	9				1	
3			8	9				1
		2				9		
1				2	7			5
	1				9	3		4
	2			3				
5	8	3						2

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Techdoku

Solution, page 8

360x			3x		2
	120x			24x	
20x		3-	10x		
12x				6x	
	48x			150x	
		3x			4

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1-6. Follow the mathematical operations for each box.

File Edit Options Buffers Tools Im-Python Python Help

```
import new_skills

def learnMarketableJobSkills():
    return linux, OSX, javascript, applescript, perl, python

if you.interest == True:
    print "E-mail join@tech.mit.edu"
```


INTERVIEW

'There is nothing sexier than a smart person.'

The Tech interviews Missy Suicide, founder of Blackheart Burlesque Tour

By Grace Young
ARTS EDITOR

In 2011, Missy Suicide (Selena Mooney) co-founded SuicideGirls, a website that features pin-up photography and profiles of alternative female models, as a way to show the world that there is more than one way to be beautiful. Seven of the “SuicideGirls” featured on the site will come to Boston’s House of Blues on Nov. 17 to star in *Blackheart Burlesque*. *The Tech* caught up with the show’s organizer, Missy Suicide, about her thoughts on the show, stereotypes, and the sexiness of engineering.

The Tech: Tell us about the story behind the online community you co-founded, SuicideGirls. What motivated you to start the group, and what are the goals?

Missy Suicide: The most exciting thing about the Internet to me has always been as an outlet for all voices, and as a way to find like-minded voices, no matter how small they may be. I found myself in Portland in 2001, after the dot com bubble had burst, with time on my hands before going back to school for photography. I started taking photos of my friends, these gorgeous women who didn't fit into society's narrow definition of beauty, women with tattoos and piercings and stories to tell.

This was 12 years ago, and the only women who were celebrated as being beautiful were blonde silicone-enhanced Barbie dolls or waif-like models. I wanted to photograph the women I knew with the same confidence, attitude, and sexiness the classic pin-ups had. I wanted the girls' pictures to depict how they felt sexiest about themselves. Once I had shot a few friends, I was sitting at a coffee shop with my friend Sean, and showed him the photos I had been shooting, and said I wasn't sure how to display them, because the girls had so much to say and share with the world, [so that] to put just their images in a book or on a wall felt wrong. We had worked together in the past and he suggested we make a website to display the photos. The idea for SuicideGirls was born.

We created a community based around the models' photos, where the girls could

keep blogs and interact with members. 12 years later the site has evolved into an international phenomenon that has resonated with people around the world. The ideal of beauty has definitely broadened in that time. I have received thousands of thank you's from women around the world, who were outsiders and didn't feel beautiful until they saw how empowered and confident the women on my site were. Hundreds of thousands of friendships have been made, tens of thousands of couples have met, hundreds of marriages and businesses have been formed because of connections that were made on our site, and dozens of babies have been born because their parents met on our site.

'People don't notice the things that you are embarrassed about or give you the most self-doubt.'

—Missy Suicide
CO-FOUNDER OF SUICIDEGIRLS

TT: What stereotypes do you think women face? How does SuicideGirls address or defy those?

MS: SuicideGirls' stereotypes are that they are all crazy vampy biker babes hell-bent on destruction in the name of a good time, but the truth is the majority of the women on the site are smart, fun, sexy women, lawyers and doctors, homemakers and baristas, professionals and college students, pursuing their dreams and enjoying their time on the planet. We combat that by having the girls share their thoughts and feelings on the site, not just their image. You can read what the girls are really up to in the blogs.

TT: What stereotypes do you think MIT students, or engineering students in general, face? What about MIT women in particular?

MS: I am not really sure what the stereotypes you [MIT students] have to face are. I don't think in general that people



COURTESY OF SUICIDEGIRLS

Stars of the *Blackheart Burlesque Tour*, organized by Missy Suicide, the founder of SuicideGirls.

think that there are women at MIT. Of course there are strong, smart, confident women at MIT, but I think the field of specialty is predominantly male-dominated, at least publicly. I think the women who attend MIT have accomplished so much, I think the best way for them to combat stereotypes would be to be leaders in their community, so that more women and girls can see that a career in technology is an option for them.

TT: *The Blackheart Burlesque Tour* features raw, erotic sexuality. So, let's say you're an expert. What would it take to make engineering sexy?

MS: There is nothing sexier than a smart person. Confidence is the sexiest attribute a person can have, and if you have all the answers then it should be easy to be confident.

TT: SuicideGirls consider themselves “the sexiest, smartest, most dangerous collection of outsider women in the world.” That’s confidence right there! Have you always been so confident, or did it take time for you to feel comfortable in your skin and find your voice? Why do you think confidence is important, and how do you suggest young people attain it?

MS: I wasn't always confident and still have my days, but for the most part feeling comfortable in my skin came when I stopped worrying about what other people thought. I am sure there are people that notice the things that I am most critical about myself, but the number of people who do is .0001 percent.

Most people don't notice the things that you are embarrassed about or give you the most self-doubt. If you can walk into a room and feel good about yourself, then most decent people will think the same thing, and fuck the ones who don't. What bearing do they have on your life anyway?

My grandmother got her first tattoo at 75. She used to say “I could never — what would people think of me?” I told her “It is your body, you are 75 years old, whose approval are you seeking?” She finally agreed with me and in the eight years since she has gotten it only one person has said anything negative about it. She has had thousands of compliments on it and her bravery in that time.

If you want something, don't wait until you are 75 to do it.

Gamelan Galak Tika, founded and directed by Evan Ziporyn, performed in Kresge on Saturday



MELISSA RENÉE SCHUMACHER—THE TECH

Gamelan Galak Tika performed on Saturday night in Kresge auditorium. Pictured, Shoko Yamamuro performed a traditional warrior dance. Gamelan is a type of complex percussion music based on pentatonic scales, used in Hindu rituals in Bali.

Past commencement speakers

Year	Date announced by <i>The Tech</i>	Commencement speaker and affiliation
2014	Nov. 12	Ellen Kullman, DuPont CEO and chairwoman
2013	Nov. 13	Drew W. Houston '05, CEO and founder of Dropbox
2012	Dec. 6	Salman A. Khan '98, founder of Khan Academy
2011	Nov. 9	Ursula M. Burns, CEO of Xerox
2010	Mar. 16	Raymond S. Stata '57, founder of Analog Devices
2009	Feb. 10	Deval Patrick, Massachusetts Governor
2008	Dec. 7	Muhammad Yunus, 2006 Nobel Peace Prize winner
2007	Mar. 13	Charles M. Vest, professor of Mechanical Engineering (at the time) and former president of MIT
2006	Dec. 13	Ben S. Bernanke, chairman of Federal Reserve Board
2005	Apr. 12	Irwin M. Jacobs '57, co-founder/chairman/CEO of Qualcomm
2004	Mar. 9	Elias Zerhouni, Director of NIH
2003	Apr. 1	George Mitchell, former U.S. Senator
2002	Feb. 26	James Wolfensohn, President of the World Bank
2001	Mar. 23	Daniel Goldin, NASA Administrator
2000	Mar. 14	Carly Fiorina, President & CEO, Hewlett-Packard
1999	Apr. 2	Tom '58 & Ray Magliozzi '72, MIT alums and hosts of NPR's "Car Talk"
1998	Feb. 24	William Jefferson Clinton, U.S. President, and David Ho, Director of Aaron Diamond AIDS Research Center
1997	Jan. 29	Kofi Annan SM '72, United Nations Secretary-General
1996	Mar. 1	Albert Gore, Vice President of the United States
1995	Apr. 21	Hanna H. Gray, President Emeritus of the University of Chicago
1994	Feb. 15	Karim Aga Khan IV, spiritual leader of the Shia Ismaili Muslims
1993	Jan. 13	Carlos Salinas de Gortari, President of the Mexico
1992	Mar. 31	Leslie Aspin PhD '66, Congressman from Wisconsin; chairman of the House Armed Services Committee
1991	Mar. 13	Walter E. Massey, director of the National Science Foundation
1990	Dec. 5	Virgilio Barco '43, President of the Republic of Colombia
1989	Feb. 14	Paul E. Tsongas, chairman of the Board of Regents of Higher Education of Massachusetts; former U.S. Senator from Massachusetts
1988	Feb. 12	A. Bartlett Giamatti, president of the National League of Professional Baseball Clubs; former president of Yale University
1987	Feb. 3	Kenneth H. Olsen '50, founder and president of Digital Equipment Corp.
1986	Feb. 4	William R. Hewlett SM '36, vice chairman of the board of directors, Hewlett-Packard
1985	Jan. 23	Lee A. Iacocca, chairman of the board and CEO, Chrysler Corp.
1984	Feb. 7	Shirley Chisholm, former Congresswoman of Brooklyn, NY
1983	Feb. 8	Helmut Schmidt, former Chancellor of the Federal Republic of Germany
1982	Mar. 5	Katharine Graham, chairman of the board and CEO, Washington Post Co.
1981	Mar. 20	Paul E. Gray '54, MIT president elected that academic year

COMPILED BY MICHAEL MCGRAW-HERDEG, JOANNA KAO, LEON LIN, AND STAN GILL, UPDATED FROM 2013

DuPont chair to address the Class of 2014

Kullman to talk at graduation

Kullman, from Page 1

ed by the opportunity to speak to an MIT audience," Grimson wrote in an email to *The Tech*. Graduate Student Council President Caleb Waugh told the MIT News Office that he saw Kullman's efforts to further science, technology, engineering, and mathematics education in the U.S. as aligned with MIT's mission. Before joining DuPont as a marketing manager in 1988, Kullman worked for Westinghouse and General Electric. According to her company biography, Kullman moved steadily up the ranks at DuPont over the years, becoming vice president of a mineral products group in 1995, leading the safety resources and bio-based materials groups by 1999, assuming the role of executive vice president in 2006, and overseeing company growth in emerging markets by 2008. Kullman holds a bachelor's degree in mechanical engineering from Tufts University and a master's degree in management from Northwestern University.

Susie: Hey Ethan!

Ethan: What's up?

Susie: I'm looking for a job on campus. Do you have any ideas? I like programming and computers.

Ethan: You should join the technology department at The Tech! We pay \$14/hr.

Ethan: You get to learn valuable job skills too!

Susie: Cool, but what if I don't know that much yet?

Ethan: We've got people who can help you out.

Ethan: E-mail join@tech.mit.edu and we'll send you more info!



Solution to Techdoku

from page 5

4	6	5	1	3	2
3	5	4	6	2	1
5	1	6	2	4	3
2	4	3	5	1	6
1	3	2	4	6	5
6	2	1	3	5	4

Solution to Sudoku

from page 5

2	7	1	6	8	3	4	5	9
4	9	8	5	7	1	2	3	6
6	3	5	9	4	2	7	1	8
3	4	7	8	9	5	6	2	1
8	5	2	4	1	6	9	7	3
1	6	9	3	2	7	8	4	5
7	1	6	2	5	9	3	8	4
9	2	4	1	3	8	5	6	7
5	8	3	7	6	4	1	9	2

SMBC, from Page 5



Solution to Crossword

from page 6

T	A	C	O	M	E	A	T	M	A	N	D	M	S
O	V	E	R	A	R	C	H	E	L	I	J	A	H
M	E	R	I	N	G	U	E	S	O	N	A	T	A
C	R	I	E	S	O	F	F	S	E	E	K	E	R
A	S	S	N	T	F	A	L	T	A	R	P		
T	E	E	T	H		R	A	N		E	R	I	E
					A	D	A	P	T	O	M	E	T
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					G	R	A	V	I	T	A	T	I
					G	R	A	V	I	T	A	T	I

Professor Crandall remembered fondly

A man passionate about teaching

Crandall, from Page 1

at Imperial College London in 1949 and reinforced by subsequent sabbaticals and lecture tours in Mexico, France, Germany, Israel, Russia, China, Japan, Australia, and South Korea. Crandall learned to speak Spanish, French, and Russian, and enjoyed giving lectures in the local language. Pat chaired MIT's faculty wives committee, which organized English-language classes for the wives of foreign students.

Crandall's hobbies included Dixieland piano, and he played gigs for many years with the Tabor Hill Jazz Band.

Crandall's professional contributions have been widely recognized. He was elected to the American Academy of Arts and Sciences, the National Academy of Sciences, the National Academy of Engineering, and the Russian Academy of Engineering.

The Acoustical Society of America awarded him the Trent-Crede Medal in 1978, and the American Society of Civil Engineers awarded him both the Theodore von Karman Medal, in 1984, and the Freudenthal Medal, in 1996. ASME awarded Crandall the Worcester Reed Warner Medal in 1971; the Timoshenko Medal in 1990; the Den Hartog Award in 1991; and the Thomas K. Caughey Dynamics Award in 2009. He was inducted as an honorary ASME member in 1988.

Crandall is survived by his daughter, Jane (Crandall) Kontrimas, with her husband Peter and son Stephen; and by his son, William BC Crandall.

A memorial service will be held at the MIT Chapel on Friday, Feb. 21,

2014, at 3 p.m., followed by a reception at the Hart Nautical Gallery. If you are unable to attend, but would like to send a story or photograph to share at the service, please email MIT Faculty Affairs Administrator Marion Gross (meg@mit.edu).

Crandall's hobbies included Dixieland piano, and he played gigs for many years with the Tabor Hill Jazz Band.

In lieu of flowers, gifts in memory of Stephen H. Crandall may be made to MIT to support the Crandall Language Fund, which purchases instructional material for students, or the Crandall Fund for Study in Mechanics, which supports graduate students in mechanical engineering.

Please make checks payable to MIT and note the account: Language Fund (2162200) or Fund for Study in Mechanics (2175900). Checks may be mailed to: Bonny Kellermann, Director of Memorial Gifts, Massachusetts Institute of Technology, 600 Memorial Drive, W98-500, Cambridge, MA 02139. Gifts may also be made by credit card. Please indicate that your gift is in memory of Stephen H. Crandall.

This obituary was originally published online by the MIT News Office on Nov. 8, 2013. This piece was submitted by the authors listed above, Prof. Gang Chen, Prof. Triantaphyllos R. Akylas, and Marion E. Gross on behalf of the Department of Mechanical Engineering



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Fall 2013 Wulff Lecture
Department of Materials Science and Engineering

Tuesday, November 12, 2013
4:00–5:00 pm
Room 10-250
Reception immediately following

Electrochemical Pathways towards Sustainability

Professor Donald R. Sadoway
John F. Elliott Professor of Materials Chemistry
Department of Materials Science and Engineering

Imagine a process that produces metal in such a way that the trees are greener in the vicinity of the smelter, that the water is cleaner downstream from the smelter. Imagine an electric vehicle that is superior in performance and competitively priced to one fueled by petroleum. Imagine drawing electricity from the sun even when the sun isn't shining. Professor Sadoway believes that there are electrochemical technologies capable of meeting all of these challenges. A faculty member in DMSE for 35 years, he co-founded two companies: Ambri, Inc. (formerly Liquid Metal Battery Corporation), which is developing new battery technology for grid-scale electricity storage, and Boston Electrometallurgical Corp., which is developing molten oxide electrolysis for the production of metals. In 2012, Sadoway delivered a TED talk on the topic of inventing the liquid metal battery. In April 2012 Time magazine named him one of the 100 most influential people in the world.

The Wulff Lecture is an introductory, general audience, entertaining lecture which serves to educate, inspire, and encourage MIT undergraduates to take up study of materials science and engineering and related fields. The entire MIT community, particularly freshmen, is invited to attend. The Wulff Lecture honors the late Professor John Wulff, a skilled, provocative, and entertaining teacher who conceived of a new approach to teaching general chemistry and inaugurated the popular freshman subject, 3.091 Introduction to Solid State Chemistry.

DMSE

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Little Brown Birds

Thoughts on thrushes, faces, and friends

By Davie Rolnick
STAFF COLUMNIST

Apparently, it's now November, since it is already dark when I get out of class. In the birdwatcher's calendar, this cold, wet season is the time to go out and search for a dozen species of sparrows and thrushes. These birds are all small and brown and go by the informal name of Little Brown Bird (LBB for short). A typical sighting goes like this: "Look, something moved in the grass! Oops, I scared it, it's flying away." "It's gone. What was it?" "Oh, an LBB."

My dad has a similar passion for cars, which baffles me just like the thrush baffled my friend.

To most non-birders, all LBBs look pretty much the same. I was recently walking along Memorial Dr. with a friend when a ball of nondescript feathers flew past into a bush and stood skulking in the shadows, bobbing its tail up and down. I remarked that it was a hermit thrush. She was confused. "But how can you tell?" (And why do you care?)

“Well,” I said, “the bird had a reddish tail, black spots on the breast feathers, and

the bill was very thin." Actually, though, I wasn't thinking about spots. Most people read their native language by recognizing whole words, instead of spelling everything letter by letter. In much the same way, this bird just looked like a hermit thrush.

What is it that drives birdwatchers to seek out a thrush, when they can surround themselves with similar-looking house sparrows for the price of a few bread-crumbs? To me, much of the appeal lies in personal associations: the sight of a hermit thrush brings forth a flock of thrushes in my memory. I imagine a haunting cascade of melody heard in the woods just before dusk — a song that the house sparrow cannot hope to rival. I see a nest of tiny blue eggs hidden in a bush. And I think of my home in Vermont, where this species is the official state bird.

My dad has a similar passion for cars, which baffles me just like the thrush baffled my friend. Walking along the street, he remarks, "That's a ____." "And it's blue," I add helpfully. I grew up with birds, but he grew up with cars. Indeed, many kids develop a passion for birds, or cars, or dinosaurs, or another kind of LBB. What drives them, while so young, to identify and classify things, and how are they able to pick out small details, seemingly instinctively?

Perhaps the answer lies in human facial recognition. It's vital to our survival that we are able to distinguish between different people in some way. From a very

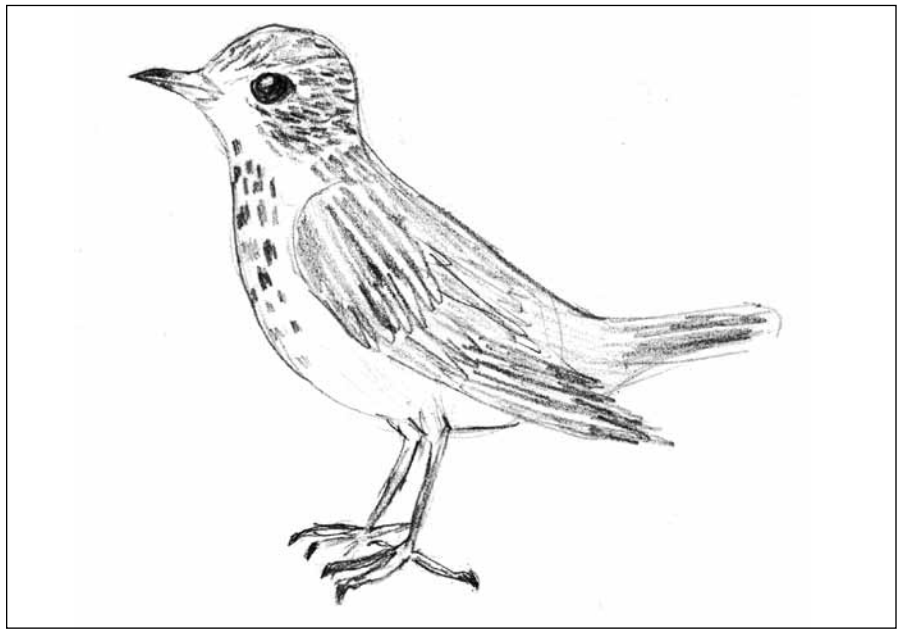


ILLUSTRATION BY DEENA WANG

Illustration of hermit thrush. Note thin beak with darker tip and spots on breast.

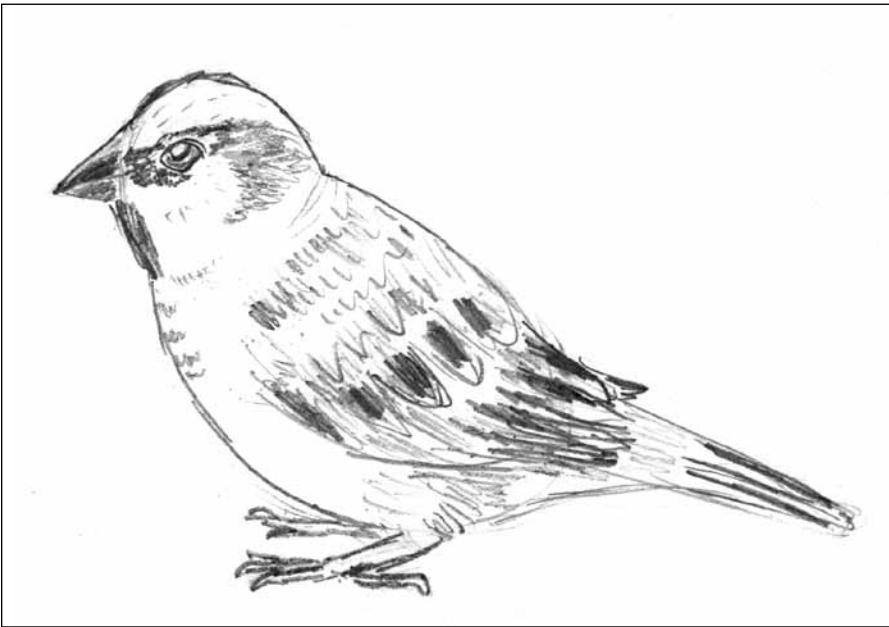


ILLUSTRATION BY DEENA WANG

House sparrows were introduced to the Americas from England. They are a common sight throughout campus.

young age, most babies learn to make eye contact and treat a human face as a fundamentally special thing. A recent study (Pascalis et al. 2005) showed that six-month-olds can also recognize individual macaques (a kind of monkey) by their faces, but that this ability is lost by the age of nine months, since presumably, most infants are not raised by macaques. Thus, it seems like we are hard-wired to find faces to recognize, but that the exact character of those faces is malleable. It thus makes sense that the neurological mechanism for facial recognition can be co-opted to many different situations, enabling us, especially while young, to pick up details rapidly and organize a collection of similar images into a coherent classification: a phylogeny of birds, or an auto registry.

Recognition is hard. Humans still beat computers hands down, as anyone who has tried Facebook's facial recognition tool can testify. Biologists are working on automated software for identifying birds, but the technology still has a long way to go.

Given the magnitude of the task, it's hardly surprising that many of us have trouble distinguishing between members of our own species. Studies have shown that women are better at it than men. People with some kinds of autism may be worse at holistic recognition, relying instead on specific traits like eye color and

hairstyle, the human equivalent of spotted feathers. There is also the cross-race effect, e.g. "all Asians look the same to me." Among people who grew up without exposure to other races, such recognition gaps are, perhaps, hardly more surprising than the inability to distinguish a thrush from a sparrow. While it is folly to assume that unfamiliar people or birds look exactly the same, correct identification certainly requires practice and motivation.

If birdwatchers are channeling facial recognition skills, surely that also helps explain some of the appeal of birding. A face that we know brings to mind not just a name but also a host of memories and emotions. It may seem that the knowledgeable naturalist is merely a textbook that notes field marks and lists species, but the truth is deeper: birds really can be feathered friends, with some of the visceral appeal of human friends. The automotive enthusiast does not simply like cars because they are diverse or have complex mechanisms that are interesting to understand. Observation is not always a passive enterprise, but can feel akin to an interpersonal bond.

When someone asks me why I care about that nondescript bird in the bushes, I wonder if they've stopped to think about how much they're observing, and what they have a relationship with — starting with the LBB they're talking to.

INNOVATION NATION

Breaking rules and transforming the economy

At Cyberposium conference, entrepreneurs present tenacity and creative solutions

By Victoria Young

How is technology fundamentally transforming our economy and our day-to-day lives? The Cyberposium, a day long conference at Harvard Business School, brought together students, thought leaders, investors, entrepreneurs, and academics to gather in thought-provoking panels to address how technology is impacting society and businesses today. MIT students from all courses and MIT alumni met at the event, excited about the panels on the future of mobile technology, sharing economy, wearable devices, social influence, education and health technology (and many others) and ready to engage in dialogue about Technomy 2.0.

Get Creative, Get Scrappy

The conference kicked off with a keynote from Bill Clerico, Y Combinator alum and founder of WePay, a payment platform for small businesses. His business started from dissatisfaction with the lack of useful solutions in the payment space for small businesses, leading him to tackle a complex and intimidating payment industry with heavy-hitters like PayPal already well established. But with his nose-to-the-grindstone approach of both grit and creativity, he built WePay from the ground up. During the early days of WePay, Clerico and his team came up with a show-stopping guerrilla marketing idea that companies often pay thousands upon thousands of dollars to

creative agencies for. In a bold move, WePay froze \$300 of cash inside a 600-pound block of ice, then placed it at the front of PayPal's Developer Conference to draw attention to competitor PayPal's policy on freezing customer accounts (sometimes with up-

The best ideas and solutions are rarely ever the first. Through iteration you can glean valuable insights that often lead to a 'Eureka!'

wards of hundreds of thousands of dollars in them). Clerico's message to us? "Get creative, get scrappy." Indeed, this clever move earned WePay coverage on the front page of popular tech blog TechCrunch and an over 225 percent increase in signups. A fine dose of inspiration to start with on Saturday morning at 8:30 a.m.

Rules Are For Fools

In another fascinating talk on breaking into what seems like an impossible industry, Travis Kalanick, the founder and CEO of Uber, explained how Uber managed to enter and dominate the cab industry. By finding ways to legally maneuver antiquated government policies and state laws, Uber refused to let current laws deter them and gained a huge competitive advantage

by being first to market in building a profitable business rooted in superior logistics and a best-in-class user experience that competitors rushed to copy. Kalanick, whose background is in engineering, found himself researching and writing papers on public policy when local politicians threatened to ban Uber from cities — entrepreneurs have to be flexible, right? So instead of caving, Uber called on its biggest fans to band together, bombarding the inboxes of the politicians with thousands of e-mails and garnering tons of media attention in favor of their beloved service. In Kalanick's words, "The minute you try to instill laws to try to protect yourself is the minute you start dying." Not only is Uber still in business (even delivering kittens to Uber lovers in San Francisco), it is now expanding into cities around the globe. Overpriced taxi medallions and laws that restrict innovation and perpetuate broken systems? Ain't nobody got time for that.

Iterating Your Way To An Innovative Solution

The best ideas and solutions are rarely ever the first. Through iteration, you can glean valuable insights from experience that often lead to a “Eureka!” “We went through 50+ prototypes in the first year. We kept asking ourselves — how can we solve this problem better?” explained Andrew Chang, the founder of Lumo Back in the wearable devices panel. Product Manager and Business Development Lead at Jaw-

bone, Andrew Rosenthal, also discussed how Jawbone leverages observations from a cultural anthropology perspective to continue to reinvent the Jawbone experience, which includes both software and hardware. Rene Reinsberg, MIT alum and founder and CEO of Locu (now GoDaddy), discussed how Locu continued iterating to develop the best possible service to help small businesses find and retain customers.

A Gathering Of Minds

From hearing ideas from speakers such as James Slezak, founder of Purpose, a platform that uses technology to power social movements, on sharing economies to Rich Miner, cofounder of Android and Google Ventures partner, discuss the future of mobile enterprise, the atmosphere was thick with passion for the power of technology. Hearing about the challenging beginnings that these entrepreneurs faced was further inspiration to stay tenacious in the face of obstacles. Most importantly, the themes and questions that the speakers brought up opened my eyes, and I'm sure those of many of the attendees there, to new opportunities that can be discovered just by having the courage to break traditional molds and rebuild systems. The economy is perpetually evolving, and being finely attuned to what simply is not working is critical in finding opportunities to redefine solutions. Don't stop asking why, and keep testing ideas until you find the best how.

MIT defeats Coast Guard in NEWMAC semis

No. 1 seeded Engineers win 5-4 on penalty kicks and advance to NEWMAC finals

By Charlotte Brackett
DAPER STAFF

Host and No. 1 seed MIT advanced past No. 4 seed Coast Guard in penalty kicks, 5-4, at the semifinals of the 2013 New England Women's and Men's Athletic Conference (NEWMAC) Tournament on Saturday morning. After remaining tied at 1-1 through two overtime periods, it came down to a battle of the goalkeepers in the shootout, with the Bears' junior goalie Richie Burns firing at the net and having his shot saved by a diving Jake L. Amereno '16 to end the game.

The Engineers will face No. 2 seed Wheaton College at the championship final tomorrow at 12:00 p.m., as the Lyons defeated the Babson Beavers by a score of 5-1 later that same afternoon. Coast Guard ended its season with a record of 9-7-4.

MIT had its first opportunity at a goal just a minute and a half into the game when Matthew A. Monheit '14 took a shot from inside the box that flew to the left side of the net but was kicked out by a Coast Guard defender that was waiting in the cage. The Bears had a chance 15 minutes later when Matt Epperly broke past defenders and shot into an open net but the ball went just wide. At the 27 minute mark, the Bears' Kyle Grell head-

ed the ball directly at the net, but Amereno was able to punch it just over the crossbar to keep the score locked at zero.

The ball spent the first five minutes of the second period in Coast Guard territory, but MIT was held to zero shots during that time due to the Bears' impressive defense. Still scoreless, the Engineers' Alexander C. McCullumsmith '17 took a shot with nine minutes remaining on the clock that skated just over the crossbar. At 85:16, following a clean pass from inside the box from Nicholas A. Diamantoni '15, Monheit gave MIT a one-goal lead when he pocketed the ball in the left side of the net past a diving Burns.

Coast Guard did not allow this lead to stand for long, as Jasen

Kingsley tied the score just two minutes later when he headed the ball over Amereno's outstretched hands off a free kick by Robert Chamberlain. With little time left on the clock for either team to score another goal, the game went to overtime.

Tech controlled play in the first overtime period, taking four shots during the 10 minutes, three of which had to be saved. The Bears were held to zero shots during this time.

Coast Guard saw more action in the second overtime period, taking four shots, with all but one of them having to be saved by Amereno. The Engineers took six shots, but only two had to be saved. With the score still tied at

one, the game was sent into a penalty kick shootout.

For MIT, Austin E. Freel '16, Monheit, Kareem R. Itani '17 and Jonathan K. Tebes '14 all connected on their penalty attempts. Coast Guard's John Rendon, Walter Heaney, John Tarzian, and Richard Davies were also successful, tying the teams at four. The Engineers' Andrew C. Fijan '14 gave MIT a 5-4 edge before Burns stepped up to face Amereno. Burns kicked a low ball to the left side of the net, but Amereno anticipated his move, diving to make the save and ending the game.

MIT outshot Coast Guard, 30-17, with Burns having to make an impressive 15 saves compared to Amereno's 10.

MIT Squash remains undefeated on the season

After three straight wins, the team is off until their weekend game against Conn.

By Charlotte Brackett
DAPER STAFF

At its first home match of the 2013-14 season, the MIT squash team added another win to the schedule when it defeated Boston College by a score of 6-3 on Saturday morning. The Engineers are currently undefeated after defeating Boston University, 5-4, on Thursday night and Northeastern, 5-4, on Friday.

Although he dropped the first game, 11-8, to Milo Watanabe, Tyler M. Finkelstein '17 turned things around and won the remaining three games easily, 11-1, 11-3, 11-4 at the top spot. Fellow Nikhil N. Punwaney '17 followed suit with his 11-7, 11-9, 11-4 victory at No. 2 over Josh Ko and David W. Bian '15 added another

win at No. 3 when he won against Nick Gadsen, 11-6, 11-4, 11-9.

As she had last year, Marina F. Crowe '16 had another tough battle at No. 6 against Rob Bohn, ultimately falling in five games. She lost the first two, 12-10, 11-5, before tying up the score with back-to-back wins, 11-5, 12-10. In a very close final game, she narrowly lost, 12-10. Abhiranjan Mitra '14 dropped his first game to Andrew Labadini, 11-6, but won the remaining three 11-5, 11-2, 11-2 to win at No. 7.

After having played three matches in a row, MIT will have a break until next weekend, hosting Connecticut College at 12:00 p.m. on Sunday, Nov. 17. This is just the second of seven consecutive home games to come. Tech will not play another game on the road until it heads to Pennsylvania to face Swarthmore College at the Fairmount Athletic Club at the end of January.



Marina F. Crowe '16 lost after 5 games in Saturday's matchup against Boston College. The Engineers went on to win 6-3 and remained undefeated.



Tucker T. Cheyne '17 kicks for an extra point on Saturday, helping the Engineers secure a win 56-36 against Maine Maritime Academy.